

**MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY  
OPERATING PERMIT TECHNICAL REVIEW DOCUMENT**

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The following table summarizes the air quality programs testing, monitoring, and reporting requirements applicable to this facility.

Facility Compliance Requirements	Yes	No	Comments
Source Tests Required	X		Method 3B, 6, 7, 9, 19, and 201A
Ambient Monitoring Required	X		
COMS Required	X		
CEMS Required	X		
Schedule of Compliance Required		X	
Annual Compliance Certification and Semiannual Reporting Required	X		Semiannual and Annual
Monthly Reporting Required		X	
Quarterly Reporting Required	X		
<b>Applicable Air Quality Programs</b>			
ARM Subchapter 7 Preconstruction Permitting	X		#2035-03
New Source Performance Standards (NSPS)	X		40 CFR 60, Subpart Y
National Emission Standards for Hazardous Air Pollutants (NESHAPS)		X	
Maximum Achievable Control Technology (MACT)		X	
Major New Source Review (NSR)	X		
Risk Management Plan Required (RMP)		X	
Acid Rain Title IV		X	
Compliance Assurance Monitoring (CAM)	X		Appendix F and G, of OP 2035.01
State Implementation Plan (SIP)	X		general requirements

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## SECTION I. GENERAL INFORMATION

### A. Purpose

The technical review document (TRD) discusses decisions made regarding the applicable requirements, monitoring plan, and compliance status of emission units affected by the operating permit proposed for this facility. This document is also intended to provide background information not included in the operating permit and to document issues that may become important during modification or renewals of the operating permit.

The technical review document is intended for reference during review of the permit by the Environmental Protection Agency (EPA) and the public. Conclusions in this document are based on information provided in the original application submitted by Colstrip Energy Limited Partnership (CELP) on June 8, 1995, additional information submitted on September 25, 1996, October 30, 1996, and a renewal application submitted on January 30, 2004. Other information was provided in preconstruction Permit Application #2035-03 submitted on July 25, 1997 and additional information submitted on August 12, 1997, August 26, 1997, November 19, 1997, November 25, 1997, and January 5, 1998.

### B. Facility Location

The facility is located 6 miles north of Colstrip, Montana on Highway 39. The legal location is North ½, Section 32, Township 3 North, Range 41 East, Rosebud County, Montana.

### C. Facility Background Information

#### Montana Air Quality Permit

The original air quality **Permit #2035** was issued to AEM Corporation for the construction and operation of a coal-fired power generation facility and a coal liquefaction-cogeneration facility from the Montana Department of Health and Environmental Sciences, Air Quality Bureau (precursor to the Department of Environmental Quality (Department)) on September 10, 1985. The application was received on April 26, 1985 and deemed complete on June 25, 1985.

The coal-fired power generation facility was identified as a major stationary source as defined in ARM 16.8.921(22)(a). Therefore, a Prevention of Significant Deterioration (PSD) review was conducted for the permit application.

Coal for the facility comes from the Western Energy mine or other nearby mines. The coal used is called culm, which is a refuse coal whose uses are somewhat limited. AEM planned to utilize 364,000 tons per year (TPY) of refuse coal, 220,752 TPY of PDF (char), 359,400 barrels (Bbl) of oil, 390,000,000 cubic feet per year (ft<sup>3</sup>/yr) of noncondensable gases, 59,568 TPY of water, and use 11,000 TPY of dolomite lime as supplemental boiler sulfur dioxide (SO<sub>2</sub>) control to produce 30.65 megawatts (MW) of power.

The first change to the permit was given **Permit #2035-A** and was issued on December 22, 1987. This permit was issued to Montana One Partners of LaJolla, California who took over ownership from AEM Corporation. The change requested was to allow the company to construct only the power generation portion of the process and to produce 39 gross megawatt (GMW). The Montana One Partners changed the project description. Montana One Partners planned to utilize 306,600 ton/yr of refuse coal to produce 39 GMW of electrical power. A circulating fluidized bed (CFB) combustion boiler with a heat rating of 485 million BTU's per hour is used in

conjunction with a limestone injection for SO<sub>2</sub> emission control. Approximately 27,000 tons/yr of limestone is used. Only one steam turbine was planned for the project under this application. A baghouse was installed to control particulate emissions. All other equipment involved with the project (e.g., coal handling, crushing and conveying) remained the same as originally proposed in Permit #2035. The emissions from the handling and crushing are controlled by a baghouse.

**Permit Alteration #2035-02** issued on April 15, 1994, was requested by CELP who was the current owner of the facility. The name on the permit was changed from Montana One Partners to Colstrip Energy Limited Partners. The ownership transfer occurred on June 10, 1988.

The purpose of the revision was to include limitations in the permit to protect the PSD increment for the 3-hour SO<sub>2</sub> standard and the Montana ambient air quality 1-hour standard for nitrogen oxides (NO<sub>x</sub>). The emission limitations were included in Section II.F. and G. These changes did not alter the annual allowable emissions from the plant or the daily SO<sub>2</sub> and NO<sub>x</sub> limitations. The limitations were added to the rolling 30-day averages required under 40 CFR 60, Subpart Da. Modeling was done to determine the amount of increment consumed as a result of these changes to the emission limitations. These changes resulted in modifications to the reporting requirements and compliance demonstrations.

The emission limitations in Section II.F. were developed based on the Department's review of information supplied by CELP. CELP proposed SO<sub>2</sub> limits of 450 pounds per hour (PPH) on a 3-hour average and 590 PPH on a 1-hour average and a NO<sub>x</sub> limit of 500 PPH on a one-hour average. The Department determined that the appropriate SO<sub>2</sub> limits should be 432 PPH on a 3-hour average and 574 PPH on a 1-hour average. These limits were arrived at based on the data submitted by CELP with the elimination of the data for June 12, 1992, because of the concerns about the representativeness of the data. After review of the CEMS data submitted, the Department and CELP determined the NO<sub>x</sub> limit should be 328 PPH, which was the number modeled in the original application.

The Department also made several additional changes to the permit. The CEMS installation, operation, and reporting requirements have been clarified. All references to the coal liquefaction-cogeneration facility were removed since the facility was not constructed.

After the preliminary determination (PD) of Permit #2035-02 was issued, CELP provided comments on the PD dated February 15, 1994. As a result of these comments, the Department made a number of changes. The changes were completed as requested by CELP, except that the Department did not change the continuous emission monitor availability requirement. The continuous emission monitor availability remained at 95%. The Department also included a condition in the permit which required the Department to notify CELP when a change is made to the Cooperative Enforcement Agreement between Montana and EPA Region VIII concerning the enforcement guidelines for continuous emission monitors. The Department did not change the general condition Section IV.H or the wording in Section II.R. For clarity, however, the issuance of Permit #2035-02 did not authorize any new construction at the facility.

**Permit #2035-03** was issued on March 20, 1998. The permit application proposed the removal of the plant-wide emission limits in Section II.F of Permit #2035-02 and the establishment of emission limits for point sources at the facility. The permit application did not seek any physical or operational changes to any process equipment at the facility. CELP also proposed removing from the permit the reference in Section II.S to the Hydrometrics letter, eliminating the ambient monitoring required in the permit, and clarifying language in Section II.J regarding sulfur content of waste coal.

CELP presented Permit Application #2035-03 as a major modification of this major stationary source. A major modification means any physical change in, or change in the method of operations of, a major stationary source. The permit application does not propose any physical or operational changes at the facility; however, Permit Alteration #2035-03 required a Prevention of Significant Deterioration (PSD) review because the proposed particulate matter 10 micrometers or less (PM<sub>10</sub>) emission limits should have been addressed in PSD Permit Application #2035. Establishing PM<sub>10</sub> emission limits on a point source basis resulted in an allowable emissions increase of 17.94 TPY of PM<sub>10</sub>. This was a significant emissions increase under PSD. The Department did not anticipate that actual emissions from the facility will change, since there will be no operational changes occurring.

Permit #2035-03 established emission limits for point sources at the facility and eliminated the total plant emission limits. Total plant emission limits for SO<sub>2</sub>, NO<sub>x</sub>, and CO in Section II.F of Permit #2035-02 were placed on the CFB boiler only. The CFB boiler is the only significant source of SO<sub>2</sub>, NO<sub>x</sub>, and CO at the facility. The opacity limitation was placed in a condition and is applicable to all equipment at the facility. PM<sub>10</sub> emission limitations were established on the CFB boiler. PM<sub>10</sub> emission limitations were also established for all equipment, transfer points, and storage facilities currently controlled by a baghouse. The PM<sub>10</sub> emission limitations in the form of a grains per dry standard cubic foot (gr/dscf) for these facilities was based on manufacturer's data submitted by CELP in the permit application.

Section II.S for Permit #2035-02 required that CELP handle ash disposed on site in accordance with the provisions specified in the Hydrometrics letter of April 24, 1985. The Hydrometrics letter contained provisions that moisture be added to the ash to prevent blowing and the disposal site be operated in a cut and fill operation. The letter also outlined in detail the soil handling and revegetation operations.

The Department's concern with the ash disposal area was that compliance be maintained with applicable requirements during operation of the disposal area and when the disposal area is inactive for any extended period of time. Therefore, Permit #2035-03 requires that water spray be used when ash is being deposited to control fugitive emissions. The permit also includes a provision requiring mitigative measures, including revegetation for the disposal area during inactive periods. This condition is intended to apply during extended inactive periods or closure.

Attachment 1 in Permit #2035-02 required CELP to monitor PM<sub>10</sub>, SO<sub>2</sub>, and ambient wind speed and direction. The current ambient monitoring site is located on the northwestern edge of the facility. The primary wind directions at the facility are from the southwest, west, and northwest. The Department believes the ambient monitoring site does not monitor a representative portion of the emissions from the facility. In order for the ambient monitors to be exposed to the average annual emissions from the facility, the monitoring site should be situated downwind of the power plant and ash disposal area. This would require that the monitoring site, in general, be located to the north of the CFB boiler stack and east to northeast of the ash disposal area.

Consequently, the Department determined that completely eliminating the ambient monitoring network operated by CELP would be inappropriate. The Department determined that the ambient monitoring site should be moved to the east of the facility at a location to be determined by the Department. Permit #2035-03 requires that CELP monitor PM<sub>10</sub> but, ambient SO<sub>2</sub> monitoring would not be required. The Department is able to monitor the SO<sub>2</sub> emitted from the CFB boiler; if CELP demonstrates compliance with their SO<sub>2</sub> emission limits, SO<sub>2</sub> ambient standards should not be violated.

Section II.J of Permit #2035-02 required that the sulfur content of waste coal not exceed 3% as received. The Department removed this condition from Permit #2035-03 because the Department has conditions and limitations which protect NAAQS for SO<sub>2</sub>. Permit #2035-03 replaced Permit #2035-02.

The Department received written comments on the preliminary determination of Permit #2035-03 from the Northern Cheyenne Tribe and CELP. As a result of these comments the Department made several changes requested by CELP. CELP requested that the Department reword all operations referred to as “coal” to “coal/waste coal.” The Department responded that coal is a broad enough term to include all varieties of coal CELP is permitted to use at the facility. However, in a meeting on March 4, 1998, CELP explained they were concerned that it could be construed that CELP’s operations referred to as coal where not permitted to process coal refuse. The Department stated that the facility is permitted in Section II.A.15 to burn coal refuse. The Department agreed to state in the permit analysis that the facility is permitted to process coal refuse at the facility. The equipment referred to as coal including the truck dump, hoppers, crushers, conveyors, and storage silos and all associated control equipment are permitted to process coal refuse. The meaning of the terms coal and coal refuse for Permit #2035-03 are defined in 40 CFR 60, Subpart Da.

### **Title V Operating Permit**

On June 8, 1995, the Department received an application from CELP for an operating permit. The permit application was assigned Permit #OP2035-00. Permit #OP2035-00 became final and effective on August 1, 1999.

#### **D. Current Permit Action**

On January 30, 2004, the Department received an application for the renewal of Title V Permit #2035-00. **Permit #OP2035-01** replaces Permit #OP2035-00.

#### **E. Taking and Damaging Analysis**

HB 311, the Montana Private Property Assessment Act, requires analysis of every proposed state agency administrative rule, policy, permit condition or permit denial, pertaining to an environmental matter, to determine whether the state action constitutes a taking or damaging of private real property that requires compensation under the Montana or U.S. Constitution. As part of issuing an operating permit, the Department is required to complete a Taking and Damaging Checklist. As required by 2-10-101 through 105, MCA, the Department has conducted a private property taking and damaging assessment and has determined there are no taking or damaging implications. The checklist was completed on April 3, 2007.

#### **F. Compliance Designation**

On November 29, 2005, the facility was inspected by the Department and CELP was found to be in compliance with their permit at that time.

## SECTION II. SUMMARY OF EMISSION UNITS

### A. Facility Process Description

CELP is an electric generating facility designed to burn low-BTU waste coal from mining operations east of Billings, Montana. The facility uses a CFB boiler. The CFB boiler is designed to efficiently utilize low-Btu coal while also allowing a high recovery of fuel sulfur through the injection of limestone into the fluidized bed.

Coal is delivered to this facility using covered trucks and trailers. The facility does not have means for coal storage beyond the truck hopper (80 ton capacity), and the boiler coal bunkers (1700 ton capacity). The coal is crushed in primary and a secondary crushers, then conveyed directly to the boiler house coal bunker. The crushed coal is metered to the fluidized bed portion of the boiler using gravimetric feeders.

Limestone is delivered to this facility in trucks and trailers and is unloaded pneumatically into a 820 ton silo. From the silo, limestone is metered to the boiler using gravimetric feeders and a pressure pneumatic conveying system. In the boiler, the coal is burned at relatively low temperatures to minimize NO<sub>x</sub> formation. Limestone fed to the boiler acts as a reactant for removing sulfur dioxide.

Ash from the boiler is discharged as either bedash or flyash. Both types of ash are collected in separate systems and conveyed pneumatically to a common ash silo. The combined ash is unloaded periodically into a plant ash truck and transported to an on-site disposal area.

### B. Emission Units and Pollution Control Device Identification

Emissions Unit ID	Description	Pollution Control Device/Practice
EU001	Truck Transport of Coal	Reasonable Precautions and Covered Haul Trucks
EU002	Truck Unloading of Coal	Baghouse
EU003	Coal Crushing and Transport	Baghouse
EU004	Coal Bunker Bin Vents	Baghouses
EU005	Limestone Unloading, Handling, and Storage	Fabric Filter Baghouse and Cartridge Filter
EU006	Circulating Fluidized Bed Boiler	Baghouse
EU007	Flyash Conveing and Storage	Baghouse
EU008	Bedash Conveying and Storage	Baghouse
EU009	Ash Storage Silo Unloading	Baghouse
EU010	Ash Truck Unloading	Water Spray
EU011	Fugitive Emissions: Ash Disposal Area	Water Spray
EU012	Fugitive Emissions: Vehicle Traffic	Paving or chemical dust suppression or water spray as backup

### C. Categorically Insignificant Sources/Activities

All emission units were identified by CELP as significant in the operating permit application. The Department determined several emission units listed in the table in Appendix A were insignificant emissions unit. CELP is not required to update a list of insignificant emission units; therefore, the emissions units and/or activities may change from those specified in Appendix A.

### **SECTION III. EXPLANATION OF OPERATING PERMIT CONDITIONS**

#### **A. Emission Limits and Standards**

Applicable requirements for significant emission units are listed after each emission unit. At the time of permit issuance, the requirements listed underneath each emission unit or group of emission units are believed to be the applicable requirements. The Department does not intend for the facility-wide conditions to supersede the applicable requirements listed below each emission unit or group of emission units.

Section II.A.11 of Permit #2035-03 states that opacity shall not exceed 20% or greater averaged over 6 consecutive minutes. The rule citation for Section II.A.11 is ARM 17.8.304. ARM 17.8.304(4) states that this rule does not apply to those new stationary sources listed in ARM 17.8.340 for which a visible emission standard has been promulgated. Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978 is an applicable requirement for the CFB boiler. Therefore, the opacity limit on the CFB boiler in Operating Permit #OP2035-00 is 40 CFR 60.42a(b). 40 CFR 60.42a(b) states that a facility shall not cause to be discharged into the atmosphere from any affected facility any gases which exhibit greater than 20 percent opacity (6 minute average) except for one 6 minute period per hour of not more than 27 percent opacity (ARM 17.8.340 and 40 CFR 60.42a(b)).

The NO<sub>x</sub> emission limitations and monitoring requirements contained in Subpart Da do not apply to CELP since the facility burns more than 25%, by weight, refuse coal (40 CFR 60.44a(a)(1)). However, CELP is subject to annual, daily, and hourly NO<sub>x</sub> emission limits established to protect ambient air quality. Section III.E.2. of the operating permit contains the applicable NO<sub>x</sub> limits.

Subpart Y - Standards of Performance for Coal Preparation Plants is applicable to emission units Truck Unloading of Coal (EU 2), Coal Crushing and Transport (EU 3), and Coal Bunker Bin Vents (EU 4). Section III.C.1. contains the applicable Subpart Y opacity limit of 20%.

#### **B. Monitoring Requirements**

ARM 17.8.1212(1) requires that all monitoring and analysis procedures or test methods required under applicable requirements are contained in operating permits. In addition, when the applicable requirement does not require periodic testing or monitoring, periodic monitoring must be prescribed that is sufficient to yield reliable data from the relevant time period that is representative of the source's compliance with the permit.

The requirements for testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance does not require the permit to impose the same level of rigor for all emission units. Furthermore, it does not require extensive testing or monitoring to assure compliance with the applicable requirements for emission units that do not have significant potential to violate emission limitations or other requirements under normal operating conditions.

When compliance with the underlying applicable requirement for an insignificant emissions unit is not threatened by lack of regular monitoring and when periodic testing or monitoring is not otherwise required by the applicable requirement, the status quo (i.e., no monitoring) will meet the requirements of ARM 17.8.1212(1). Therefore, the permit does not include monitoring for insignificant emission units.



This permit includes periodic monitoring or recordkeeping for each applicable requirement. The information obtained from the monitoring and recordkeeping will be used by CELP to periodically certify compliance with the emission limits and standards. However, the Department may request additional testing to determine compliance with the emission limits and standards.

**C. Test Methods and Procedures**

The operating permit may not require testing for all sources if routine monitoring is used to determine compliance, but the Department has the authority to require testing if deemed necessary to determine compliance with an emission limit or standard. In addition, CELP may elect to voluntarily conduct compliance testing to confirm its compliance status.

**D. Recordkeeping Requirements**

CELP is required to keep all records listed in the operating permit as a permanent business record for at least 5 years following the date of the generation of the record.

**E. Reporting Requirements**

Reporting requirements are included in the permit for each emissions unit and Section V of the operating permit “General Conditions “explains the reporting requirements. However, CELP is required to submit semi-annual and annual monitoring reports to the Department and to annually certify compliance with the applicable requirements contained in the permit. The reports must include a list of all emission limit and monitoring deviations, the reason for any deviation, and the corrective action taken as a result of any deviation.

**F. Public Notice**

In accordance with ARM 17.8.1232, a public notice was published in the *Billings Gazette* newspaper on or before June 29, 2007. The Department provided a 30-day public comment period on the draft operating permit from June 29, 2007, to July 30, 2007. ARM 17.8.1232 requires the Department to keep a record of both comments and issues raised during the public participation process. The comments and issues received by July 30, 2007 will be summarized, along with the Department's responses, in the following table. All comments received during the public comment period will be promptly forwarded to CELP so they may have an opportunity to respond to these comments as well.

## SECTION IV. NON-APPLICABLE REQUIREMENTS ANALYSIS

Pursuant to ARM 17.8.1221, CELP requested a permit shield for all non-applicable regulatory requirements and regulatory orders identified in the tables in Section 8 of the permit application. In addition, the CELP permit application identified a permit shield request for applicable requirements for both the facility and for certain emission units. The Department has determined that the requirements identified in the permit application for the individual emissions units are non-applicable. These requirements are contained in the permit in Section IV- Non-applicable Requirements.

The following table outlines those requirements that CELP had identified as non-applicable in the permit application but will not be included in the operating permit as non-applicable. The table includes both the applicable requirement and reason that the Department did not identify this requirement as non-applicable.

**Table 3. Regulations Not Identified as Non-Applicable By the Department.** *Table 3 lists the requirements that the department did not agree were non-applicable.*

Reason	Rule Citation
These rules do not have specific requirements for major sources because they are requirements for EPA or state and local authorities. These rules can be used as authority to impose specific requirements on a major source.	40 CFR 51 40 CFR 71
These regulations may not be applicable to the source at this time, however, these regulations may become applicable during the life of the permit.	ARM 17.8.514                      40 CFR 60.14 ARM 17.8.515                      40 CFR 60.15 ARM 17.8.611 ARM 17.8.612 ARM 17.8.740 <i>et seq.</i> ARM 17.8.818-828
This federal regulation has specific procedural requirements that may become relevant during the permit term.	40 CFR 61 Subpart M
This rule contains requirements for regulatory authorities and not major sources; this rule can be used to impose specific requirements on a major facility.	40 CFR 62
These regulations are applicable requirements to specific emissions units; therefore, a facility wide shield will not be granted.	ARM 17.8.340
These rules include either a statement of purpose, applicability statement, regulatory definitions, or a statement of incorporation by reference. Therefore, facility wide permit shields will not be granted for these rules.	ARM 17.8.301                      40 CFR 52 ARM 17.8.302                      40 CFR 63 Subpart A ARM 17.8.341                      40 CFR 63 Subpart B ARM 17.8.342 ARM 17.8.601 ARM 17.8.901 <i>et. seq.</i> ARM 17.8.1001 <i>et. seq.</i> ARM 17.8.1100 <i>et. seq.</i>

Reason	Rule Citation
Repealed Regulations	ARM 16.8.1414 ARM 16.8.1419
This rule may or may not be relevant but the Department will not be granting a shield for this rule.	40 CFR 70

## **SECTION V. FUTURE PERMIT CONSIDERATIONS**

### **A. MACT Standards**

As of the draft date, the Department is unaware of any future requirement that may be promulgated during the permit term for which this facility must comply.

### **B. NESHAP Standards**

As of the draft date, the Department is unaware of any future requirement that may be promulgated during the permit term for which this facility must comply other than 40 CFR 61, Subpart M for Asbestos.

### **C. NSPS Standards**

As of the draft date, the Department is unaware of any NSPS Standards that are applicable to the facility other than 40 CFR 60, Subpart Da for the (CFB) Boilers.

### **D. Risk Management Plan**

As of the draft date, this facility does not exceed the minimum threshold quantities for any regulated substance listed in 40 CFR 68.115 for any facility process. Consequently, this facility is not required to submit a Risk Management Plan.

If a facility has more than a threshold quantity of a regulated substance in a process, the facility must comply with 40 CFR 68 requirements no later than June 21, 1999; 3 years after the date on which a regulated substance is first listed under 40 CFR 68.130; or the date on which a regulated substance is first present in more than a threshold quantity in a process, whichever is later.